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10/666,741	09/19/2003	Yiqing Liang	1617880-0002 CON	6058

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NEW YORK, NY 10036

EXAMINER

AZARIAN, SEYED H

ART UNIT	PAPER NUMBER
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2625

DATE MAILED: 08/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/666,741

Applicant(s)

LIANG ET AL.

Examiner

Seyed Azarian

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 19 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 43-80 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 43-80 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

***Claim Rejections - 35 U.S.C. § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 43-52, 55-59, 62-63, 75-76 and 79-80, are rejected under 35 U.S.C. 103(a) as being unpatentable over Maki et al (U.S.6,072,903) in view of Fowler et al (U.S.6,601,010).

Regarding claim 43, Maki et al discloses a device comprising: a first module configured to receive video images and to identify objects of interest in response to the video images (column 2, lines 46-53, creating a model of a moving object, such as head of a person or (objects of interest), also column 8, lines 9-18, configuration of capture image and tracking of motion picture, by use of television camera);

a second module coupled to the first module and configured to classify a plurality of shape and posture categories based on a plurality of observed states of the objects of interest (column 2, lines 53-59, by analyzing the position and posture of an object on the basis of the moving image (plurality) of object, also column 23, line 64 throw column 24, line 7, tracking of motion picture, by use of television camera);

and a third module coupled to the second module, wherein the third module is configured to identify behaviors of the objects of interest in response to the plurality of shape and posture categories (see column 15, lines 49-57, refer to detecting information about position, shape and posture of object, also column 32, lines 56-67, refer to target object and configured to determine

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pixels corresponding, and position and posture of target and column 24, line 63 through column 25, line 11, described the motion of the object automatically or acquire information on the “position of the object or on the change of the posture”, on the basis of the time-series images, and posture information detector, tracks the motion of the object automatically according to the position of the feature points).

However regarding claim 43, Maki clearly described the motion of the object automatically or acquire information on the “position of the object or on the change of the posture”, on the basis of the time-series images, and posture information detector, tracks the motion of the object automatically according to the position of the feature points (column 24, line 63 through column 25, line 11), but does not explicitly disclose its corresponding “characterize the behaviors of the objects of interest in response to standard object behaviors”. On the other hand Fowler, teaches (column 15, line 65 through column 16, line 14, studies of stimulant induced stereotypies which are characterized by intense activity in one place).

Therefore it would have been obvious to a person of ordinary skill in the art at time the invention was made, to modify Maki et al invention according to the teachings of Fowler because it provides instrument and method useful in behavioral of animals, or information detecting unit that enable to identify activity and object of interest which fully satisfies the requirements of claim.

Regarding claim 44, Maki et al discloses the device of claim 43, wherein the second module further obtains feature information by tracking the objects of interest over a plurality of video images (column 4, line 57 through column 5, line 6, tracking a target object contained in a moving picture).

Regarding claim 45, Maki et al discloses the device of claim 44, wherein the characterizing of the behaviors of the objects of interest further includes comparing feature

information of the objects of interest with predefined categories exhibited by the standard object behaviors (column 5, lines 38-48, refer to comparison).

Regarding claim 46, Maki et al discloses the device of claim 44, wherein the characterizing of the behaviors of the objects of interest further includes identifying one of eating, rearing, jumping, drinking, running, jumping, walking, chewing, grooming, hanging, cuddling, landing vertically, repetitively jumping, circling, sleeping, twitching, awakening, digging, foraging, sniffing, pausing, urinating, stretching, licking, scratching, spinning, sitting, standing, and lying of the objects of interest (column 2, lines 46-59, moving object in a complex shape, such as the head of a person).

Regarding claim 47, Maki et al discloses the device of claim 43, wherein the first module is an object identification and segregation module that identifies and segregates predetermined types of objects from the video images (see column 29, lines 23-28, refer to receiving three-dimensional position information).

Regarding claim 49, Maki et al discloses the device of claim 48, wherein the third module includes a behavior identification module, which is coupled to a standard object behavior storage module (column 28, lines 13-25, storage section).

Regarding claim 50, Maki et al discloses a system for characterizing activity of objects comprising: a video camera (column 7, lines 26-33, television camera), a video digitization unit, a digital processing unit that includes, a device of claim 43, and a memory device (column 14, lines 20-28, also column 25, lines 32-37, storage section).

Regarding claim 52, Maki et al discloses the method of claim 51, wherein the analyzing temporal ordering of the primitives further includes utilizing time-series analysis to identify a transition from a previous behavior primitive to a next behavior primitive (see column 3, lines 15-22, refer to changes of image in different time, and also column 27, lines 20-31, refer to comparison and synthesizing the images).

Regarding claim 55, Maki et al discloses the method of claim 51, wherein the identifying objects of interest from the stream of video image frames further includes detecting foreground objects of interest from the video image frames (see column 19, lines 44-52, corresponding to pixel and intensity of the light).

Regarding claim 57, Maki et al discloses the method of claim 51, wherein the identifying objects of interest further includes identifying humans, vehicles, and other moving and non-moving objects (column 12, lines 38-53, objects other than target object).

Regarding claim 63, Maki et al discloses the method of claim 51, wherein the identifying an objects of interest further includes detecting one of vertical position side view, horizontal position side view, vertical position front view, horizontal position front view, and moving of the objects of 4 interest (see column 25, lines 6-11, refer to posture information).

With regard to claims 75-76 and 79-80, the arguments analogous to those presented for claims 43, 49 and 55 are applicable.

With regard to claims 48, 51 and 56, the arguments analogous to those presented for claims 43, 49 and 55 are applicable.

With regard to claims 58-59 and 62, the arguments analogous to those presented for claims 43 and 46 are applicable.

3. Claims 53, 64, 66-74 and 77, are rejected under 35 U.S.C. 103(a) as being unpatentable over Maki et al (U.S.6,072,903) in view of Fowler et al (U.S. 6,601,010) as applied to claims above and further in view of Smith et al (U.S.5,870,138).

Regarding claim 53, Maki and Fowler does not explicitly state “ Hidden Markov Model ” . On the other hand Smith et al teaches (column 17, lines 41-43, the device can be implemented as a Hidden Markov Model and has two phases of operation, namely training and recall).

Therefore it would have been obvious to a person of ordinary skill in the art at time the invention was made, to modify Maki et al and Fowler invention according to the teachings of

Smith et al because it is device to map the input data (images) from the camera to outputs which represents the probability of the input images belonging to a specified set of expressions, and can easily be implements in an images device such as video camera.

With regard to claims 64, 66-74 and 77, the arguments analogous to those presented for claims 43, 49, 53 and 57 are applicable.

4. Claims 54, 60-61, 65 and 78, are rejected under 35 U.S.C. 103(a) as being unpatentable over Maki et al (U.S.6, 072,903) in view of Fowler et al (U.S.5,546,439) as applied to claims above and further in view of Bar-Shalom et al (U.S.6,535,131).

Regarding claim 54, Maki and Fowler does not explicitly state “ includes tracking physical changes of the objects of interest over “multiple video image”. On the other hand Bar-Shalom, teaches (column 8, lines 47-50, movement and general behavior of animals by utilizing a plurality of video camera).

Therefore it would have been obvious to a person of ordinary skill in the art at time the invention was made, to modify Maki et al invention according to the teachings of Bar-Shalom because it provides video interface, which monitors the movements and general behavior of the animals, which can easily be implemented in an image device such as video camera.

Regarding claim 61, Maki et al discloses the method of claim 60, wherein the identifying of postures of the objects of interest includes detecting the shapes of the objects of interest (column 15, lines 49-56, determining the shape).

With regard to claims 60, 65 and 78, the arguments analogous to those presented for claims 43, 49 and 54 are applicable.

### Other prior art cited

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. patent (3,974,798) to Meetze Jr. is cited for method and apparatus for studying laboratory animal behavior.

U.S. patent (5,816,256) to Kissinger et al is cited for movement-responsive system for conducting tests on freely-moving animal.

U.S. patent (4,337,726) to Czekajewski et al is cited for animal activity monitor and behavior processor.

U.S. patent (4,574,734) to Mandalaywala et al is cited for universal animal activity monitoring system.

### **Contact Information**

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Seyed Azarian whose telephone number is (571) 272-7443. The examiner can normally be reached on Monday through Thursday from 6:00 a.m. to 7:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh Mehta, can be reached at (571) 272-7453. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application information Retrieval (PAIR) system. Status information for published application may be obtained from either Private PAIR or Public PAIR.

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Status information about the PAIR system, see [http:// pair-direct.uspto.gov](http://pair-direct.uspto.gov). Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

*Seyed Azarian*  
*Patent Examiner*  
*Group Art Unit 2625*  
August 8, 2005

  
**DANIEL MIRIAM**  
**PRIMARY EXAMINER**